

**What is claimed is:**

1. A stable aqueous/aqueous emulsion system which is prepared with a hydrophilic polymer.

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2. The method of preparing for preparing a stable aqueous/aqueous emulsion comprising steps of:

10 a) selecting appropriate polymeric materials for dispersed phase and continuous phase which are immiscible, biocompatible and have biased partition to the active ingredients to be encapsulated;

15 b) selecting appropriate surface modifiers which are charged, non-toxic, and possessing a moderate interfacial tension between the above two phases;

20 c) developing phase diagram for the above; and

d) dispersing the dispersed phase into the continuous phase under an appropriate shear stress.

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3. The aqueous/aqueous emulsion system of claim 1 with polymeric surface modifier.

30 4. A method for encapsulating protein or peptide comprising the emulsion system of claim 1.

35 5. The method of claim 4 wherein the encapsulated protein or peptide is used for sustained release formulations or dry powder formulations.

6. An encapsulation comprising the emulsion system which is prepared with a hydrophilic polymer.
7. The encapsulation of claim 6 which encapsulates protein, peptide, virus, bacterium, or cell.
8. A liposome-based drug formulation which comprises the emulsion system of claim 1.
- 10 9. Viral, bacterial or cell microencapsulation comprising the emulsion system of claim 1.
10. A nano-sized preparation comprising the emulsion system of claim 1.
- 15 11. The nano-sized preparation of claim 10, wherein the preparation is nano-sized crystallization, nano-sized precipitation or other nano-sized assembly.
- 20 12. A diagnosis kit comprising the emulsion system of claim 1.